A. Cover Sheet *(Attach to front of proposal.)*

1. Specify: ☒ agricultural project or ☐ urban project ☒ individual application or ☐ joint application

2. Proposal title—concise but descriptive: EXPANDED MOBILE IRRIGATION LAB

3. Principal applicant—organization or affiliation: WEST STANISLAUS RCD

4. Contact—name, title: NORMAN CROW, CHAIRMAN WSRCD

5. Mailing address: 220 NORTH EL CIRCULO, PATTERSON CA 95363

6. Telephone: 209-892-3026

7. Fax: 209-892-3026

CROW55@inreach.com

8. E-mail: H2O_SAVER@PowerHydrodynamics.Com

9. Funds requested—dollar amount: $ 886,983.00

10. Applicant cost share funds pledged—dollar amount: $ 928,800.00

11. Duration—(month/year to month/year): JUNE 2001 to DEC 2003

12. State Assembly and Senate districts and Congressional district(s) where the project is to be conducted:
STATE ASSEMBLY - 8, 10, 11, 15, 17, 25, 26, 27, 28, 30
STATE SENATE - 4, 5, 7, 12, 15
US CONGRESSIONAL - 1, 3, 10, 11, 16, 17, 18

13. Location and geographic boundaries of the project: STANISLAUS Co., MERCED Co., SAN JOAQUIN Co., SAN BENITO Co., SANTA CRUZ Co., CONTRA COSTA Co., So. SACRAMENTO Co., EASTERN ALAMEDA Co., SOLANO Co., NO. MONTEREY Co. AND THE AREA OF SAN LUIS + DELTA MENDOTA WATER AUTHORITY

14. Name and signature of official representing applicant. By signing below, the applicant declares the following:
- the truthfulness of all representations in the proposal;
- the individual signing the form is authorized to submit the application on behalf of the applicant;
- the applicant will comply with contract terms and conditions identified in Section 11 of this PSP.

NORMAN CROW *(printed name of applicant)*

2-12-01 *(date)*

Norman W Crow *(signature of applicant)*

CALFED Grant

Task # 1

Quantifiable Objectives: 53, 66, 67, 68, 71, 75, 88, 106, 107, 113, 114, 127, 130, 132, 144, 147 and 157

Priority Outcomes: 52, 80, 81, 82, 85, 101, 120, 121, 137 and 152

Title: Expanded Mobile Irrigation Lab

Executive Summary:

The West Stanislaus Resource Conservation District (WSRCD) is located approximately 70 miles southeast of San Francisco and includes over 200 square miles of irrigated cropland. There are eight creeks that cross the WSRCD draining from the eastern slopes of the Coast Range to the San Joaquin River. During the summer months, the flow in these creeks consists entirely of irrigation runoff. This runoff is conveyed through eighteen main agricultural drains, in addition to creeks, and discharged into the San Joaquin River.

Stanislaus County contributes tremendously to California's agricultural output. This area ranks in the top two most productive counties for crops such as dry beans, almonds, apricots, as well as casaba, crenshaw, and honeydew melons. Six of the top ten commodities from Stanislaus County are almost exclusively grown in California, a fact that emphasizes the importance of this county's agricultural production to the rest of the nation. Gross agricultural income for Stanislaus County in 2000 will again exceed one billion dollars. Other crops include peas, tomatoes, broccoli, cauliflower, strawberries, sweet potatoes, spinach, sugar beets, corn, walnuts, cherries, apples, alfalfa and peaches.

The WSRCD's Mobile Irrigation Lab conducted studies during the 1997, 1998 and 1999 growing seasons to evaluate the effects different soil and water amendments would have on the irrigation water infiltration rates for the first irrigation after the field was tilled. The study also set out to document the increased water infiltration and reduction of TSS (Total Suspended Solids) and pesticide residues that may be attached to the soil particles in the tail water when different forms of PAM (polyacrylamides) were used and applied in different ways.

The goal of all three studies was to provide the local growers with an incentive (through a reduction in the amount of irrigation water used) to use PAM, Humic Acid, and gypsum while irrigating. The use of these water amendments resulted in less tail water leaving the farm and tail water that meets or exceeds the locally established WSRCD goal of 300 mg/l TSS.

All of the studies were a great success with 80 side-by-side tests (control verses treatment) conducted with the cooperation of thirteen different growers. This study provided the WSRCD, the Natural Resources Conservation Service, and the University of California Cooperative Extension with some very valuable data, which was passed on to the local

growers through the WSRCD's monthly newsletter, "West Side Water". Initial results indicate a potential increase in infiltration of between 16 and 50 percent and a reduction in sediment of 5300 TSS to as low as 18 TSS when PAM was used. The amount of water that could have been saved on the fields tested was around 38%.

The WSRCD Mobile Lab has been very successful because it goes beyond just measuring Distribution Uniformity (DU) and looks at the entire irrigation system. Our Mobile Lab does a complete PG&E style pump test (when the system has a pump) so we can look at energy efficiency and total water applied on the field. This allows the Mobile Lab Team Leader to find ways to equate the BMPs suggested to money savings for the grower. We have found that the growers are more likely to implement the BMPs if there are cost savings for them. Our Mobile Lab has also been a pioneer in water quality BMPs with the PAM and Humic Acid studies that they have completed.

While there are several Mobile Irrigation Labs in the southern part of the state, there is only two in the central and northern portion. The WSRCD would like to expand its Mobile Lab and offer these services to all of the RCDs and Irrigation Districts in the counties of Stanislaus, San Joaquin, Solano, Merced, Contra Costa, San Benito, Santa Cruz, and northern Monterey and to the members of the San Luis & Delta/Mendota Water Authority. We could also cover southern Sacramento County, the eastern side of Alameda County and Yolo County if needed.

With this type of expansion we could expedite the information transfer of BMPs and make a major impact on water conservation, water quality and energy conservation.

We are proposing to enter into MOUs with the each of the RCDs and Irrigation Districts in these areas to provide Mobile Lab service to the growers in their district and to conduct at least two field days/growers meetings for them each year. We will provide each of the districts a year-end report that will identify potential water and energy savings as well as a summary of what was found and what BMPs were recommended on each field evaluated. If we receive complete funding our Mobile Lab could test up to 480 irrigation evaluations per year and an additional 800 to 1000 pumps tested. We are seeking funding to provide this expanded service for three years. We feel that it is necessary to fund the program for three years so personnel can be hired, trained and equipment purchased and so funding to support the program beyond the first three years can be secured.

Past results have shown a reduction in the amount of water used in areas were there is a Mobile Irrigation Lab. Based on the water savings we have found in the areas that are now served by the Mobile Lab, we project a potential water savings of 1000 acre-feet per year per area served. This of course may be lower in Contra Costa County but should be higher in San Benito County. Along with these potential water savings will come the potential energy savings. According to the Western Area Power Administration, it is possible to realize a savings of at least 50% with a comprehensive pump test program. While it is hard to put a firm number on what 50% savings means, based on the tests we conducted over the last couple of years you could easily see a reduction of 175,000 to 450,000 kWh per year by improving efficiencies and not pumping excess water. Put into monetary terms this

is about $250,000 to $320,000 savings per year in water and about $21,000 to $54,000 per year in energy. As stated above all of the actual savings numbers will be tracked each year in a year-end report submitted to the participating Districts.

The following Irrigation Districts will be working on this project. The Modesto Irrigation District, the Turlock Irrigation District, the Oakdale Irrigation District, the West Stanislaus Irrigation District, the Patterson Irrigation District, the Del Puerto Water District, the Central California Irrigation District, the Panoche Water District, the Stockton East Water District, the Pacheco Water District, the Banta-Carbona Irrigation District, the Merced Irrigation District, the West Side Irrigation District, the San Luis Water District, the San Benito County Water District, the Plain View Water District, the San Luis Canal Company, the Pajaro Valley Water Management Agency and the Mercey Springs Water District.

We also have a number of supporters from the following agencies. They are the USDA's Natural Resources Conservation Service, the California Department of Water Resources, the University of California Cooperative Extension of Stanislaus County, East Merced RCD, San Luis RCD, San Joaquin County RCD, Poso RCD, Panoche RCD, Los Banos RCD, The Friends of the Tuolumne, The Tuolumne River Preservation Trust and the San Luis & Delta–Mendota Water Authority.

If we are not able to secure these funds, the expansion will be delayed until funds are found. The proposed project and accomplishments outlined for Task # 1 are based on the budget provided. Output will be proportioned to grant received.

Task 1 Expanded Mobile Irrigation Lab: Year 1

	January	February	March	April	May	June	July	August	September	October	November	December
Sign MOU's with participating Districts				$ -	$ -							
Perform Irrigation Evaluations and Pump Tests				$ 32,851	$ 32,851	$ 32,851	$ 32,851	$ 32,851	$ 32,851	$ 32,851	$ 32,851	$ 32,851
Submit annual reports to Districts												$0
Collect Data and Submit Final Report												

2001

Task 1 Expanded Mobile Irrigation Lab: Year 2

	January	February	March	April	May	June 2002	July	August	September	October	November	December
Sign MOU's with participating Districts												
Perform Irrigation Evaluations and Pump Tests	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638
Submit annual reports to Districts												$0
Collect Data and Submit Final Report												

Task 1 Expanded Mobile Irrigation Lab: Year 3

	January	February	March	April	May	June	July	August	September	October	November	December
Sign MOU's with participating Districts												
Perform Irrigation Evaluations and Pump Tests	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638	$ 24,638
Submit annual reports to Districts												$0
Collect Data and Submit Final Report												$0

2003

Cost break down for expanded Mobile Lab Program

Employee	Truck	Truck Ins	Med Ins	Cell phone	Gas/Oil	Travel	Supplies	Subtotal	PH Admin*	Total per year per Team Leader
$ 36,000.00	$ 7,200.00	$ 1,750.00	$ 1,500.00	$ 1,500.00	$ 5,000.00	$ 2,400.00	$ 1,000.00	$ 56,350.00	$ 14,087.50	$ 70,437.50

# of Team Leaders	# of days in season to do evaluations (avg year)	Max # of evaluations per season	Net Program Cost	RCD Admin	Gross Program Cost	Per Eval
4	120	480	$ 257,096.88	$ 38,564.53	$ 295,661.41	$ 615.96
4	200	800/1000			Total Cost share per year	
					$ 309,600.00	

Inkind cost share

# of Districts	# of Evals	Amount of time needed for Grower (hours)	Amount of time needed for District (hours)
8	480	2	1

# of Districts	# of Tests	Amount of time needed for Grower (hours)	Amount of time needed for District (hours)
8	1000	1.5	0.5

Cost per Hour	Cost share per year for Evals
$ 90.00	$ 129,600.00

Cost share per year for Pump tests

$ 180,000.00

* = PH Admin covers clerical and office space overhead

Bill Power, Owner
Power Hydrodynamics
6301 Bearden Lane
Modesto, CA 95357
209 527-2908
E-mail: bill@powerhydrodynamics.com

Mobile Lab operator for 10 years. Completed over 600 Irrigation System Evaluations. Currently have contracts with West Stanislaus RCD, East Stanislaus RCD, Stockton East Water District, The San Luis & Delta/Mendota Water Authority, The Santa Clara Valley Water District, The San Benito County Water District, and The Center for Irrigation Technology at Cal State Fresno to run Mobile Lab program.

Pump tester for 10 years. Had PG&E contract for 7 years. Tested over 3500 pumps of all sizes and types.

Completed all course work at the Cal Poly SLO, ITRC for School for Irrigation Managers in both Ag and Landscape.

Completed three years of studies on sediment and tail-water reduction for both the DOC and BOR on grants through the West Stanislaus RCD.

Articles about the sediment reduction / infiltration work I have done in the following: The California Farmer Feb. 1996, The Furrow (John Deere Magazine) Spring 1997 and Feb. 2000, Vegetable Magazine Winter 2000